WOODLAND SHORES WATER AND SEWER ASSOCIATION
(PWSNO 1280203)
SOURCE WATER ASSESSMENT REPORT

December 20, 2002

State of Idaho
Department of Environmental Quality

SOURCE WATER ASSESSMENT FOR WOODLAND SHORES WATER AND SEWER ASSOCIATION

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For non-community transient water systems like Woodland Shores Water and Sewer Association, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Woodland Shores Water and Sewer Association* describes factors used to assess the susceptibility to contamination. The analysis relies on information from the well logs; an inventory of land use inside the delineation boundaries, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheets for Woodland Shores Water and Sewer Association are attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Well Construction. Woodland Shores Water and Sewer Association serves a residential neighborhood on the southwest side of Rockford Bay on Lake Coeur d'Alene. Three wells provide drinking water for 5 full time and 41 seasonal connections.

Well #2 was drilled in July 1988 to a depth of 300 feet. The 8-inch steel casing extends from 17 inches above the gravel pumphouse floor to 43 feet below where it terminates in granite. The remaining depth of the well bore is not cased. The 18-foot deep surface seal extends through 8 feet of clay and cobbles, a fractured granite stratum, and is completed in a layer of hard granite. The highest production level of the well is in a fracture zone 280 feet below the surface. The static water level was not recorded on the well log. At the time of the last sanitary survey of the system in June 1997, Well #2 needed to be vented. A poured concrete floor, drained to daylight, needed to be installed in the pumphouse. Improvements were to have been completed by September 30, 1997.

Well #3, drilled in August 1989, is 600 feet deep. It is equipped with a 6-inch casing protruding 12 inches above ground and terminating in granite 67 feet below. The 25-foot deep surface seal passes through 20 feet of clay just below the surface and into a decomposed granite layer. The most productive layer of the well is 575 feet below the surface. The static water level is at 40 feet. No wellhead or surface seal maintenance deficiencies were observed during the inspection in 1997. The inspection report noted the presence of a back up community drainfield within 150 feet of Well #3.

Well #4 was drilled in August 1989, but was not connected to the system until 1999. The well is 670 feet deep with a 21-foot deep steel casing and 20 foot deep surface seal. Both the casing and seal extend through a layer of clay and decomposed granite near the surface and into a water bearing black and white granite strata that lies from 18 to 275 feet below the surface. The well has seven production levels between 180 feet and 540 feet below the surface with a cumulative output estimated at 14.75gallons per minute. The static water level is not reported on the well log.

Well Site Characteristics. Hydrologic sensitivity scores are derived from information on the well log and from the soil drainage classification inside the recharge zone delineated for your wells. Soils in the well recharge zones for the Woodland Shores Water and Sewer Association wells are generally classed as poorly drained to moderately well drained which mean that they impede migration of contaminants toward the wells. The well log for Well #2 shows extensive fracturing above the water table that is not indicated on the well logs for Wells #3 and #4. Water was first encounter less than 300 feet below the surface in all the wells. All of the wells are above the 100-year flood plain for the lake.

Potential Contaminant Inventory. The 1000-foot radius recharge zones delineated for the Woodland Shores Water and Sewer Association wells cover a wooded area that has been developed for housing. Roads crossing the delineation boundaries carry light volume local traffic, and were not counted as significant potential sources of contamination. Parts of the delineated areas are submerged, but surface water was discounted as a potential contaminant source since the wells are on the hillside and above the flood plain. Homes in the Woodland Shores service area are connected to a community septic system. The primary drainfield and a backup up drainfield are located inside the 1000-foot radius delineated around Well #3. The distance between Well #3 and the backup community drainfield is less than the separation distance required under Idaho Rules for Public Drinking Water Systems (IDAPA 16.01.08).

Water Quality History. Woodland Shores Water and Sewer Association has had recurrent episodes of microbial contamination including a Maximum Contaminant Level violation in August 1999 that resulted in temporarily shutting down Well #3 for disinfection. Nitrates have not been detected in annual testing. The system has occasionally failed to monitor as required.

Susceptibility to Contamination. An analysis of the Woodland Shores Water and Sewer Association wells, incorporating information from the public water system file, well logs, and the potential contaminant inventory, ranked the Wells #2 and #4 moderately susceptible to all classes of regulated contaminants. Risk factors associated with local geology added the most points to the final susceptibility scores. Well #3 ranked highly susceptible to microbial and inorganic chemical contamination because of the backup community drainfield within 150 feet of the well. The complete analysis worksheets for your wells are on pages 6 through 8 of this report. Formulas used to compute final scores and susceptibility rankings are at the bottom of page 8.

Source Water Protection. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Operating and maintaining the wells in full compliance with Idaho Rules for Public Drinking Water Systems is the most important drinking water protection tool available to Woodland Shores Water and Sewer Association. Correspondence in the Public Water System file for Woodland shores does not indicated whether improvements called for in the 1997 sanitary survey of the system have been completed. Reservoir repairs, installation of a drained concrete floor in the pump house and installing a screened vent on Well #3 are particularly important for preventing contamination. The system needs to relocate the backup drainfield or to apply for a waiver of the setback between the backup drainfield and Well #3.

There are a number of voluntary measures the Woodland Shores can implement as well. Every system should develop an emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website (http:// www.deq.state.id.us/water/water1.htm) to guide systems through the emergency planning process. Drinking water protection partnerships with landowners in the recharge zones should also be established. Some of them may not be aware that their property is in a sensitive area where household practices could have a negative impact on public drinking water supplies.

The Woodland Shores should also investigate ground water stewardship programs like Home*A*Syst. These programs are designed to help well owners assess everyday activities for their potential impact on drinking water quality. Topics include petroleum product storage, septic system maintenance, handling and storing lawn and household chemicals and similar activities. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

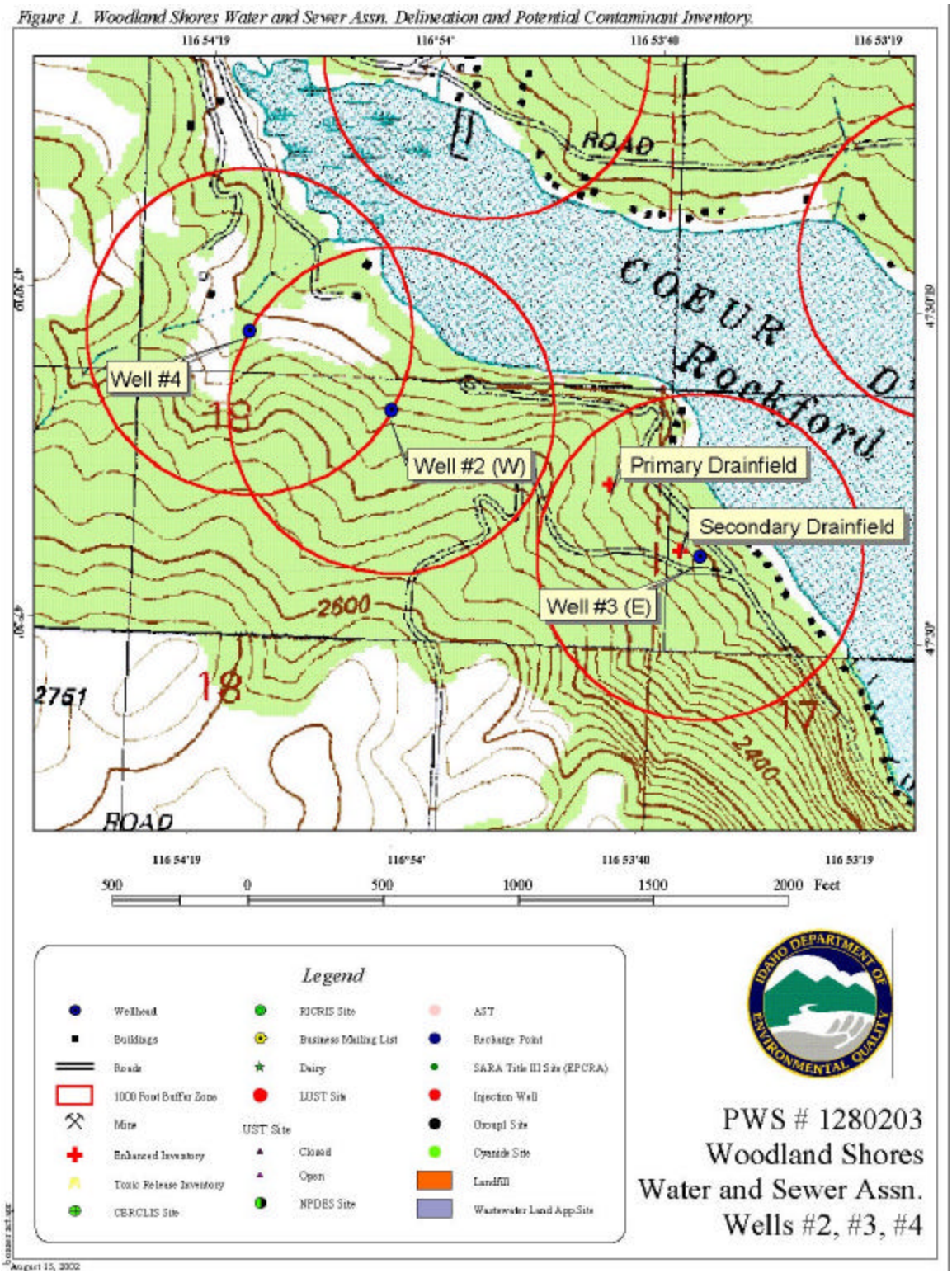
Assistance. Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning.

Coeur d'Alene Regional DEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

Website: http:// www.deq.state.id.us/water/water1.htm

Figure 1. Woodland Shores Water and Sewer Assn. Delineation and Potential Contaminant Inventory.



Ground Water Susceptibility

Public Water System Name : **WOODLAND SHORES WATER AND SEWER ASSN**

Public Water System Number : **1280203**

Well : **WELL #2 (W)**

11/13/02 10:00:32 AM

1. System Construction		SCORE			
Drill Date	7/8/88				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1997				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	NO. Needs vent & drained concrete floor in pumphouse	1			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	UNKNOWN	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**2**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**4**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use		Score	Score	Score	Score
Land Use	RESIDENTIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score		**2**	**2**	**2**	**2**
Potential Contaminant / Land Use - 1000-FOOT RADIUS					
Contaminant sources present (Number of Sources)	NO	0	0	0	0
(Score = # Sources X 2) 8 Points Maximum		0	0	0	0
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-Foot Radius	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-Foot Radius		**0**	**0**	**0**	**0**
Cumulative Potential Contaminant / Land Use Score		**2**	**2**	**2**	**2**
4. Final Susceptibility Source Score		**7**	**7**	**7**	**7**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility

Public Water System Name : **WOODLAND SHORES WATER AND SEWER ASSN** Well : **WELL #3 (E)**

Public Water System Number : **1280203** 11/13/02 10:00:45 AM

1. System Construction		SCORE			
Drill Date	8/11/89				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1997				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**0**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**3**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use -		Score	Score	Score	Score
Land Use	RESIDENTIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	YES. Backup community drainfield	YES	NO	NO	YES
Total Potential Contaminant Source/Land Use Score -		**2**	**2**	**2**	**2**
Potential Contaminant / Land Use - 1000-FOOT RADIUS					
Contaminant sources present (Number of Sources)	YES. Primary community drainfield	1	0	0	1
(Score = # Sources X 2) 8 Points Maximum		2	0	0	2
Sources of Class II or III leacheable contaminants or Microbials	YES	1	0	0	
4 Points Maximum		1	0	0	
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-Foot Radius	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-Foot Radius		**3**	**0**	**0**	**2**
Cumulative Potential Contaminant / Land Use Score		**5**	**2**	**2**	**4**
4. Final Susceptibility Source Score		**4**	**4**	**4**	**5**
5. Final Well Ranking		**High**	Low	Low	**High**

Ground Water Susceptibility

Public Water System Name : **WOODLAND SHORES WATER AND SEWER ASSN** Well : **WELL #4**

Public Water System Number : **1280203** 11/13/02 10:01:01 AM

1. System Construction		SCORE			
Drill Date	8/6/89				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1997				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	UNKNOWN	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**3**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**3**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use -		Score	Score	Score	Score
Land Use	RESIDENTIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score -		**2**	**2**	**2**	**2**
Potential Contaminant / Land Use - 1000-FOOT RADIUS					
Contaminant sources present (Number of Sources)	NO	0	0	0	0
(Score = # Sources X 2) 8 Points Maximum		0	0	0	0
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-Foot Radius	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-Foot Radius		**0**	**0**	**0**	**0**
Cumulative Potential Contaminant / Land Use Score		**2**	**2**	**2**	**2**
4. Final Susceptibility Source Score		**7**	**7**	**7**	**7**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

0 - 5 Low Susceptibility
6 - 12 Moderate Susceptibility
> 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.